

**CLAIMS:**

1. A network router management interface comprising:

a client interface that receives, from a network router client, configuration requests

5 and operational requests encoded with extensible markup language tags;

a storage device storing a network management interface schema that maps the

extensible markup language tags to configuration and operational information associated

with software modules running on a network router, the software modules including a chassis

software module that defines an inventory of components in the network router chassis, a

10 device configuration software module that defines a physical configuration of the network

router, and a routing protocol module that administers protocols supported by the network

router;

a management server software module that parses the configuration requests and the

operational requests received at the client interface and accesses the corresponding

15 configuration and operational information associated with the chassis software module, the

device configuration software module, and the routing control software module according to

the network management interface schema, and emits to the client interface replies encoded

with extensible markup language tags according to the network management interface

schema, wherein the management server module, in response to a selection made by a user,

20 emits the replies for presentation in either a rendered or unrendered format.

2. The network router management interface of claim 1, wherein the tags include

chassis tags that define output for the chassis software module, device configuration tags that

define output for the device configuration software module, and routing protocol tags that

25 define output for the routing protocol software module.

3. The network router management interface of claim 1, wherein the

management server module receives at least some of the replies encoded with extensible

markup language tags from one or more of the software modules.

4. The network router management interface of claim 1, wherein the management server module encodes at least some of the replies with extensible markup language tags based on non-encoded replies received from one or more of the software modules.

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5. The network router management interface of claim 4, wherein the non-encoded replies include ASCII replies, the management server module encoding the ASCII replies in extensible markup language tags to form the encoded replies.

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6. The network router management interface of claim 1, wherein the selection made by the user includes user input received at the client interface indicating a desire to present the replies in an unrendered form.

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7. The network router management interface of claim 1, wherein the management server module emits the replies in a default mode unless the selection made by the user overrides the default mode.

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8. The network router management interface of claim 7, wherein the management server module includes with the replies an indication that the replies are not to be rendered when the user overrides the default mode.

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9. The network router management interface of claim 1, wherein the configuration requests include requests to change an existing configuration of the network router, the management server module interacting with one or more of the software modules to effect the requested change.

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10. The network router management interface of claim 1, wherein the extensible markup language is XML, and the client interface presents an XML-based application programming interface (API).

11. The network router management interface of claim 1, wherein the network router includes a packet routing engine that specifies one or more routes for data packets, and a packet forwarding engine that forwards the data packets according to the specified routes, and the management server module is a process within an operating environment executing on the packet routing engine.

12. A method comprising:

receiving, at a client interface of a network router, configuration requests and operational requests encoded with extensible markup language tags;

accessing a network management interface schema that maps the extensible markup language tags to configuration and operational information associated with software modules running on a network router, the software modules including a chassis software module that defines an inventory of components in the network router chassis, a device configuration software module that defines a physical configuration of the network router, and a routing protocol module that administers protocols supported by the network router;

parsing the configuration requests and the operational requests;

accessing the corresponding configuration and operational information associated with the chassis software module, the device configuration software module, and the routing control software module according to the network management interface schema;

communicating, to a network router client, replies encoded with extensible markup language tags according to the network management interface schema; and

in response to a selection made by a user, emitting the replies for presentation in either a rendered or unrendered format.

13. The method of claim 12, wherein the tags include chassis tags that define output for the chassis software module, device configuration tags that define output for the device configuration software module, and routing protocol tags that define output for the routing protocol software module.

14. The method of claim 12, further comprising receiving at least some of the replies encoded with extensible markup language tags from one or more of the software modules.

5 15. The method of claim 12, further comprising encoding at least some of the replies with extensible markup language tags based on non-encoded replies received from one or more of the software modules.

10 16. The method of claim 15, wherein the non-encoded replies include ASCII replies, the method further comprising encoding the ASCII replies in extensible markup language tags to form the encoded replies.

15 17. The method of claim 12, wherein the selection made by the user includes user input received at the client interface indicating a desire to present the replies in an unrendered form.

18. The method of claim 12, further comprising emitting the replies in a default mode unless the selection made by the user overrides the default mode.

20 19. The method of claim 18, further comprising including with the replies an indication that the replies are not to be rendered when the user overrides the default mode.

25 20. The method of claim 12, wherein the configuration requests include requests to change an existing configuration of the network router, the method further comprising interacting with one or more of the software modules to effect the requested change.

30 21. The method of claim 12, wherein the extensible markup language is XML, the method further comprising presenting an XML-based application programming interface (API) at the client interface.

22. The method of claim 12, wherein the network router includes a packet routing engine that specifies one or more routes for data packets, and a packet forwarding engine that forwards the data packets according to the specified routes, and the method is performed in part as a process within an operating environment executing on the packet routing engine.

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23. A computer-readable medium carrying instructions to cause a programmable processor to:

receive, at a client interface of a network router, configuration requests and operational requests encoded with extensible markup language tags;

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access a network management interface schema that maps the extensible markup language tags to configuration and operational information associated with software modules running on a network router, the software modules including a chassis software module that defines an inventory of components in the network router chassis, a device configuration software module that defines a physical configuration of the network router, and a routing protocol module that administers protocols supported by the network router;

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parse the configuration requests and the operational requests;

access the corresponding configuration and operational information associated with the chassis software module, the device configuration software module, and the routing control software module according to the network management interface schema;

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communicate, to a network router client, replies encoded with extensible markup language tags according to the network management interface schema; and

in response to a selection made by a user, emit the replies for presentation in either a rendered or unrendered format.

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24. The computer-readable medium of claim 23, wherein the tags include chassis tags that define output for the chassis software module, device configuration tags that define output for the device configuration software module, and routing protocol tags that define output for the routing protocol software module.

25. The computer-readable medium of claim 23, wherein the instructions cause the processor to receive at least some of the replies encoded with extensible markup language tags from one or more of the software modules.

26. The computer-readable medium of claim 23, wherein the instructions cause the processor to encode at least some of the replies with extensible markup language tags based on non-encoded replies received from one or more of the software modules.

27. The computer-readable medium of claim 26, wherein the non-encoded replies include ASCII replies, and the instructions cause the processor to encode the ASCII replies in extensible markup language tags to form the encoded replies.

28. The computer-readable medium of claim 23, wherein the selection made by the user includes user input received at the client interface indicating a desire to present the replies in an unrendered form.

29. The computer-readable medium of claim 23, wherein the instructions cause the processor to emit the replies in a default mode unless the selection made by the user overrides the default mode.

30. The computer-readable medium of claim 29, wherein the instructions cause the processor to emit with the replies an indication that the replies are not to be rendered when the user overrides the default mode.

31. The computer-readable medium of claim 23, wherein the configuration requests include requests to change an existing configuration of the network router, and the instructions cause the processor to interact with one or more of the software modules to effect the requested change.

32. The computer-readable medium of claim 23, wherein the extensible markup language is XML, and the instructions cause the processor to present an XML-based application programming interface (API) at the client interface.

33. The computer-readable medium of claim 23, wherein the network router includes a packet routing engine that specifies one or more routes for data packets, and a packet forwarding engine that forwards the data packets according to the specified routes, and wherein the instructions cause the processor to execute a process within an operating environment executing on the packet routing engine.

34. A system comprising:  
 a client interface to transmit configuration requests and operational requests encoded with extensible markup language tags to a network router, and receive replies encoded with extensible markup language tags from the network router; and  
 a management server module that emits the replies to a user for presentation in either a rendered or unrendered form in response to a selection made by the user.

35. A method comprising:  
 transmitting configuration requests and operational requests encoded with extensible markup language tags to a network router;  
 receiving replies encoded with extensible markup language tags from the network router; and  
 presenting the replies to a user in either a rendered or unrendered form in response to a selection made by the user.

36. A computer-readable medium carrying instructions to cause a programmable processor to:

transmit configuration requests and operational requests encoded with extensible markup language tags to a network router;

5 receive replies encoded with extensible markup language tags from the network router; and

present the replies to a user in either a rendered or unrendered form in response to a selection made by the user.

10 37. A system comprising:

a client interface to transmit configuration requests and operational requests encoded with extensible markup language tags to a network router, and receive replies encoded with extensible markup language tags from the network router;

15 a storage device storing a schema that maps the tags to configuration and operational information associated with one or more software modules running on a network router;

a management server module that accesses the information associated with the software modules, and emits the replies according to the schema, wherein the management server emits the replies for presentation in either a rendered or unrendered form in response to a selection made by the user.

20 38. A method comprising:

receiving configuration requests and operational requests encoded with extensible markup language tags to a network router;

25 accessing a schema that maps the tags to configuration and operational information associated with a chassis module, a device configuration module, and a routing protocol module running on a network router;

accessing the information associated with the software modules;

emitting replies encoded with extensible markup language tags according to the schema; and

30 presenting the replies to a user in either a rendered or unrendered form in response to a selection made by the user.



39. A computer-readable medium carrying instructions to cause a programmable processor to:

receive configuration requests and operational requests encoded with extensible markup language tags to a network router;

5 access a schema that maps the tags to configuration and operational information associated with a chassis module, a device configuration module, and a routing protocol module running on a network router;

access the information associated with the software modules;

emit replies encoded with extensible markup language tags according to the schema;

10 and

present the replies to a user in either a rendered or unrendered form in response to a selection made by the user.